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GEOGRAPHICAL RECORD

THE AMERICAN GEOGRAPHICAL SOCIETY

MEETINGS OF THE SOCIETY. A regular meeting of the Society was held at the Engineering Societies' Building, No. 29 West Thirty-ninth Street, on Tuesday Evening, March 15, 1910.

Vice President Greenough in the chair.

The following persons, recommended by the Council, were elected to Fellowship:

Emilie Andrews Deen,
Newell Martin,
Bradley Martin, Jr.,
Benson B. Sloan,
Samuel Sloan,
William S. Sloan,
Pierre J. Smith,
Theodore N. Vail.

Vice-President Greenough then introduced the speaker of the evening, Professor A. V. Williams Jackson, of Columbia University, who addressed the Society on "Persia: The Land of the Lion and the Sun." His discourse was illustrated by stereopticon views. The Society then adjourned.

Another regular meeting was held at the Engineering Societies' Building on Tuesday evening, April 26, Vice-President Raven in the chair. The following persons, recommended by the Council, were elected to Fellowship:

J. Coleman Drayton,
T. P. Gilfedder,
Barend van Gerbig,
Thomas M. Osborne,
John B. Stetson, Jr.

Vice-President Raven then introduced Mr. Henry G. Bryant, President of the Geographical Society of Philadelphia, who addressed the Society on "Java: The Gem of the Orient." Many lantern views were shown. The Society then adjourned.

NORTH AMERICA

SURFACE WATERS IN THE NORTHWEST. A report on the flow of rivers of the Northwest that empty into the Pacific Ocean has just been published by the U. S. Geological Survey as Water-Supply Paper 252. These streams are in Washington, Oregon, Idaho, and northwestern Montana.

The report gives records of flow at 127 gaging stations on 83 rivers and creeks; also records of the stage of water on four lakes. The streams range from small creeks to large rivers, including the Columbia. These streams drain areas of widely different character, as may be seen by comparing the barren desert of central Oregon with the heavily forested slopes of the Cascade and Coast ranges, where the annual rainfall in some places exceeds 100 inches.

In the region considered in this report the U. S. Reclamation Service has seven projects under construction, covering an irrigable area of 776,000 acres, and has eight projects under consideration. Private capital is developing at least twelve projects under the authority of the Carey act, the largest, the Twin Falls project, covering an area of nearly 500,000 acres. About 1,500,000 acres are under irrigation in the Northwest and this area will be more than doubled when the projects now under way are completed. The water power available in this region is very great. The streams draining into the north Pacific Ocean will furnish at low water over 12 million horsepower—one-third of the total for the United States.

SURVEYS IN ALASKA THIS YEAR. The United States Geological Survey has placed twelve parties in the Alaskan field this year. As in previous years, the work will consist of explorations, reconnaissance and detailed surveys, study of the geology and mineral resources, and, in the placer districts, stream gaging. J. W. Bagley, assisted by C. E. Giffin, is continuing the detailed topographic survey of the Eagle River district begun last year. It is proposed to complete the survey of the gold-bearing belt which lies between Juneau and Berners Bay.

A systematic investigation of the Alaska coal fields was begun in 1902. Reconnaissance surveys have now been carried over nearly all the coal-bearing areas that are of immediate economic importance and detailed investigations of some of these areas are now in progress. The detailed survey of the Matanuska field will be undertaken this season. The survey will be made under the direction of G. C. Martin, assisted by F. J. Katz and Theodore Chapin.

The most extensive survey will embrace a region between the Gulkana (a westerly tributary of the Copper) and the upper Susitna. Placer gold has been found in commercial quantities on Valdez Creek and has been reported to occur on other streams in this field. Except for the work of the prospector this region is practically unknown. The plan for this season contemplates a topographic and geologic reconnaissance map of the area lying between the Valdez-Fairbanks trail and the upper Susitna, including the southern slope of the Alaska Range. F. H. Moffit, assisted by B. L. Johnson, will undertake the geologic work in this district. This party will also make a supplementary study of the Chistochina placer district, which has not been examined by any member of the Geological Survey since 1902. D. C. Witherspoon, assisted by C. E. Griffin, will carry on the topographic work.

The water resources available for placer mining in the Yukon-Tanana region will be further determined by C. E. Ellsworth and G. L. Parker, who began work in the Fairbanks district in April and later extended it into the Circle district. Practically the entire Yukon-Tanana area has been mapped, except a belt lying south of the river and west of the Delta. A reconnaissance survey of this belt, which contains some extensive lignite deposits as well as gold placers, will be made by J. W. Bagley, topographer, and S. R. Capps, geologist. The party will land near the mouth of Nenana River about the end of June and go southward to the base of the Alaska Range, there beginning a survey which is to be extended eastward to the Delta, covering the Nenana coal field and the Bonnifield placer district.

The reports from the Innoko placer district are so encouraging that it is now proposed to make a geologic and topographic reconnaissance survey of the more important part of it, including the northern part of the Haiditarod basin. This work will be done by A. G. Maddren, geologist, and C. G. Anderson, topographer.

In Northern Alaska last season, an exploratory survey was extended westward from the lower Yukon to Seward Peninsula. This year it is proposed to carry a similar survey northward from the bend of the Koyukuk to the Kobuk and thence southwestward to Candle, in Seward Peninsula. This expedition will not have time to gather much detailed information, yet it is expected to procure sufficient data for a general geologic and topographic map which will be of value to the prospector.

Alfred H. Brooks will continue the supervision of Alaskan surveys and investigations. He will be employed in office duties in Washington until about the end of July and will then start for Alaska, where he will join the Martin party in the Matanuska coal field. Later he will visit the Knopf party in the Juneau district and will then go to Fairbanks and finally, in the fall, to Nome.

During the year C. W. Wright will complete the report on the copper deposits of the Kasaan Peninsula and Hetta Inlet regions, U. S. Grant and D. F. Higgins will complete the report on the geology and mineral resources of the eastern part of Kenai Peninsula, and L. M. Prindle will be engaged in preparing a detailed report on the Fairbanks gold district.

THE YAKUTAT BAY REGION, ALASKA. R. S. Tarr's report on the Physiography and Glacial Geology of the Yakutat Bay region, Alaska (Professional Paper 64, U. S. Geological Survey, 1909, 1-144), is based upon two summers' work in a region made classical by the reconnaissance studies of Russell and Gilbert. Additional interest in this area has resulted from the recent great oscillations of many of the ice tongues in the region. The work upon which this report is based was financed by the United States Geological Survey, the first summer aided by a grant from the American Geographical Society. The first of these results were described in the BULLETIN (Vol. 38, 1906, pp. 99-101 and 145-167).

THE SWITZERLAND SOCIETY. A society of this name has been organized in New York whose purpose is "to create and encourage the desire to visit Switzerland and to do everything possible to facilitate the achievement of such object by every member of the society." The society is open to all interested in Switzerland without fee beyond the registration charge of ten cents and 25 cents for subscription to Current Topics, the official organ which is published monthly. H. M. Somner is President and W. Widmer, Secretary, the latter's address being P. O. box 266, Madison Square Branch, New York. We have received from the Society a number of handsomely illustrated brochures on various parts of Switzerland.

SOUTH AMERICA

THE ALTITUDE OF MOUNT HUASCARÁN. The following letter has been received from Mrs. Fanny Bullock Workman giving more particulars of the triangulation work last year, at her expense, of the summits of Mt. Huascarán in Peru (*Bull.* Vol. 42, No. 1, p. 55, 1910). Her investigation was suggested by the statement of Miss Annie S. Peck, who ascended one of the peaks of Huascarán in 1908, to the effect that this Peruvian mountain is higher than Aconcagua, to which Schrader, the latest investigator, had assigned a height of 22,812 feet. Mrs. Workman says:

"Believing Aconcagua to be the highest Andean peak, I decided to have a careful detailed triangulation made of the two summits of Mt. Huascarán. Through the assistance of Messrs. Fr. Schrader and Henri Vallot, acting for the Société Générale d'Études et de Travaux topographiques of Paris, an expedition was sent to Peru for me under the direction of M. de Larminat to effect this purpose.

"Assisted by the Peruvian Government and favorable weather, M. de Larminat and his assistants were able to carry out this work successfully between August and November, 1909.

"A base 1,600 meters (5,248 feet) long was measured in the Rio Santa valley in the Black Cordillera at an altitude of 3,800 meters (12,464 feet). This base was measured by means of a 50 meter (164 feet) tape of Invar metal. From two stations, one at either end of this base, and from two others, the positions and altitudes of which were determined by trigonometrical measurements from them, that is, from four stations in all, the positions and relative altitudes of the two summits of Huascarán were fixed by azimuthal and zenithal angles taken by theodolite.

"In order to ascertain the true height of these stations above average sea-level, a progressive leveling was conducted from the highest station, called the Garganta Signal, down along the mule-path leading from Yungay by way of Quillo to the sea at the port of Casma.

"The Garganta Signal is higher than the col where the path between Yungay and Casma reaches its highest point. The difference in height between these two was ascertained by triangulation from the Garganta Signal to be 159 meters (521.5 feet). From the col down to sea-level at the port of Casma the leveling was performed by means of the tacheometer. The altitude of the Garganta Signal being thus established, it was an easy matter to fix the altitude of the other three stations, from which the triangulation of the summits was made.

"From two of these stations, from which it was visible, the altitude of the church tower at Yungay was also established at 2,568 meters (8,432 feet).

"The average sea-level was determined by four double observations of two water-marks made at intervals of six hours ten minutes between each. The agreement of these was satisfactory, owing to the small amplitude of the tide at Casma, and also to the fortunate circumstance that the observations were made at time of neap tide.

"The results of these measurements show the height of the north peak of Huascarán to be 6,650 meters, 21,812 feet, and the height of the south peak 6,763 meters, 22,182 feet. FANNY BULLOCK WORKMAN.

"BISKRA, Feb. 18, 1910."

THE FORESTS OF BAHIA, BRAZIL. The depletion of the timber resources of the densely populated states of the northern hemisphere has stimulated a rapidly growing interest in the timber resources of South America. Brazil has been of chief interest in this connection by reason of the large number of navigable streams that drain her forest lands and the nearness of many of her forests to the sea. An examination of the forests of Bahia has recently been made by the American Consul at Bahia with interesting results (Daily Consular and Trade Report, No. 3685, Jan. 14, 1910). The state is wonderfully rich in rare timbers such as rosewood, mahogany and cedar. It is found that between the 13th and 19th parallels of south latitude, and the Atlantic Ocean, there are 12,000,000 acres of choice timber lands which will yield a total of 120,000,000,000 board feet of cabinet woods, the percentages of the different woods, named after their American equivalents or near-equivalents being as follows: Rosewood, 1%; jacaranda cabiuna, 5%; mahogany, 10%; oak, 15%; hickory, 20%; birch, maple, elm, ash, etc., 40%; and Spanish cedar, 9%. The zone of woods has a coast line of 300 miles, along which are numerous ports. Not less than nineteen rivers, navigable for scores of miles, traverse the region in an easterly direction, an important feature as much of the timber may be driven down the rivers to the sea. A large part of the timber districts is owned by the Government and can be operated only by Government concession. In spite of these favorable conditions, there is, as yet, but little lumber production and some lumber is actually imported from this country. Ordinary lumber costs from 9 to 10 cents per board foot in Bahia. ISAIAH BOWMAN.

ASIA

PROFESSOR JACKSON'S LECTURE ON PERSIA. In Prof. A. V. Williams Jackson's lecture before the Society, on March 15, on "Persia: the Land of the Lion and the Sun," he said that it is now also the country of the new constitution and the youthful Shah. Herodotus tells us that the Persians were the readiest of all nations to adopt foreign customs and foreign ideas. There was, perhaps, something significant in these words, and in adopting new customs Persia may have lessons to teach in the future as she taught them in the past.

The great table land of Iran covers an area nearly one-fifth as large as that of the United States. Mountains guard its every approach. A portion of the vast plateau is well-watered, but there are no rivers in Persia worthy of the name. Irrigation is widely practiced, and some of the districts of Persia are the most fertile in the world. Railroads are yet to be introduced, as Persia can at present claim only half a dozen miles of track. With transportation facilities the country is capable of great development.

It is most instructive to journey, as the writer has done, past Lake Urumiah in northwestern Persia westward and southward to the historic sites and monuments of Persia's greatest glory in the time of Cyrus and Darius; to visit the homes of the greatest Persian poets at Shiraz on the way towards the Persian Gulf; to cross northward through the central desert to Yezd, the chief headquarters of the few remaining Zoroastrians in Persia; thence to visit the capital, Teheran, and the neighboring Rei, with its ancient ruins; to follow the track of Alexander the Great through northern Iran, visiting the holy city of Meshed; and to cross over the mountain barriers into Russian Turkistan.

MR. BRYANT IN JAVA. In the lecture of Mr. Henry G. Bryant before the Society, April 26, on Java, he described his recent journey along the east coast and through the interior of the island. He was impressed with the distinctly paternal character of the Dutch colonial administration and said it had been the policy of the government, till recently, to discourage foreign travel in the Dutch East Indies. The most prominent features of his lecture were his descriptions of the people in various parts of the island, of his visit to the central volcanic region where he ascended to the crater of the active Bromo volcano, of his excursion to the heart of old Java, where the natives have been least affected by foreign influences and of the famous and colossal ruins, the monuments of the early civilization of the island. The lantern views that illustrated his interesting discourse were especially effective.

EUROPE

THE SERVIAN GEOGRAPHICAL SOCIETY. Our Society has been officially informed of the organization of the "Société Serbe de géographie" at Belgrade. The purpose is to promote geographical science in the largest sense; that is to say, it will include the allied sciences of geology, climatology, phytogeography, ethnography and historical geography, as relates to the Balkan Peninsula, and, especially, Servia. The meetings of the Society will be devoted not only to the purely scientific aspects of the study but also to its popularization. Beginning in January next, the Society will issue a quarterly publication. The President of the Board of Direction is Professor Jovan Cvijic, who occupies the chair of Geography in the Royal University of Servia and is well known for his contributions to the knowledge of Karst phenomena in the Balkan Peninsula.

POLAR

MR. STEFÁNSSON'S NOTES FROM THE ARCTIC. Mr. Stefánsson, in a letter to the *Bulletin* dated "Near Cape Bathurst, Canada, Aug. 26, 1909," says:

"On the night of Jan. 1 a terrible S. W. storm took the ice from the beach at Flaxman Island and by morning it was out of sight. There was nothing but open sea to the Northwest, North and West.

"During the whaling season at Cape Smythe, about May 20, two whaling umiaks belonging to Mr. C. DeW. Brower (the Cape Smythe Whaling & Trading Co.) were carried off with the ice in one of the severe North-Easters. The boats contained 12 or 14 Eskimos and one white man, Mr. J. Hadley. They were beyond sight of land all but the last two days of five weeks and got ashore at Cape Lisburne about 230 miles S. W. of Cape Smythe. They had been without food two days and had thrown away about $5,000 worth of whalebone and whaling gear. They secured no seal or walrus, but two polar bears. When lost they had with them a ration intended for two weeks. None of the men was the worse for the experience. I give this as throwing some light on the movement of the ice.

"Capt. C. Th. Pedersen, of the trading and whaling schooner *Challenge* of Unalaska, told me that near the Jones Islands in August this year he passed a large floe, about a half mile square, which was in parts level, partly covered with rounded hills of ice, and had near one corner a rounded hillock higher than the 'crow's-nest' of his vessel—which, he estimates, is 60 feet above the water. Capt. Stephen Cottle of the steam whaler *Karluk* says he has frequently seen pressure ridges as high as his yards—60 to 75 feet. Both these gentlemen I consider reliable. The 'crow's-nest' is, of course, a good vantage point from which to get the approximate height of objects almost or exactly on a level with the observer's eye. This matter of the height of the ice in the American Arctic Sea is interesting in comparison with the observations of Nansen and others, who place the maximum pressure ridges north of the old world at 35 to 40 feet.

"There are in print, in more places than one, statements to the effect that boulders are rare on the coast west of Flaxman Island, Alaska. Paddling or tracking an umiak along this coast has given one ample opportunity to know that, excepting in river deltas proper, there is not a five-mile stretch without boulders between the location of the mythical "Gwyder Bay" of the maps, just east of the Colville, to Herschel Island, unless it be indeed the first five miles west of Herschel, where I did not follow the shore. There are boulders at Cape Simpson and at various points between that cape and the Colville. Natives say there are boulders here and there inland from Point Barrow. These boulders range in size from a man's head to the dimensions of a large wagon load of hay, and are of varied structure. I have never seen a stone larger than a hen's egg actually imbedded in the ice, but gravel is common though usually in the form of a mass of frozen earth of a gravelly nature; just as other masses of earth in the ice are sand, still others river silt, peat, etc. Boulders seem especially frequent along the higher cutbanks—leading one to suppose that they are about equally distributed along the various parts of the shoreline. True, there are stretches of a mile or two here and there without a stone of noticeable size; some of these stretches include cutbanks, and even ice-bearing cutbanks.

PHYSICAL GEOGRAPHY

GLACIAL LAKE OJIBWAY. The glacial lakes marginal to the retreating continental ice sheet in the basin of the present Great Lakes have long been described and known. Of those north of the Hudson Bay divide Glacial Lake Agassiz was long ago mapped and discussed by Upham. It has remained for Coleman to give a name to the marginal glacial lake between the Height of Land and Hudson Bay in the region north of the Great Lakes (Lake Ojibway: Last of the Great Glacial Lakes. By A. P. Coleman. Eighteenth *Annual Report* of the Bureau of Mines of Ontario, Vol. XVIII, Part 1, 1909, pp. 284-293). Glacial Lake Ojibway is thought to have covered approximately 33,000 square miles at the maximum stage and to have been not more than 500 feet deep. Its existence is proved by the association of lake-bottom deposits, such as clay and other fine materials, with favorable topographic conditions, namely a northward-retreating ice sheet which would pond back waters against the divide of the Height of Land. Several probable outlets are discussed, the latest being in Quebec east of the Ontario boundary some 300 miles northwest of Montreal. The lake bottom clays are thought to be all freshwater formations and marine deposits are not known to extend more than 450 feet above James Bay. The later relationships of Lake Ojibway are uncertain.

The probable area of this glacial lake, which has been little studied as yet, is shown by a sketch map. Much needs to be done to determine its relations to glacial Lake Agassiz on the west, to the water bodies on the north and to clear up other important questions. LAWRENCE MARTIN.

TERRESTRIAL MAGNETISM. In the Annual *Report* for 1909 of Dr. L. A. Bauer, Director of the Department of Terrestrial Magnetism of the Carnegie Institution (Year Book No. 8, pp. 194-202, plates 12, 13, 14), he notes the completion of the *Carnegie,* the vessel designed for the special needs of a magnetic survey of the oceans, and says that excellent progress was made by all the field parties. Magnetic work was carried on in British North America, Central America, West Indies, Colombia, Ecuador, British, Dutch, and French Guiana, Africa, Persia, Turkey, Asia Minor, southern Asiatic Russia and China. All operations were conducted in regions not easily traversed and in general where very few, if any, magnetic data had been obtained previously. Special expeditions had consequently to be organized and detailed reports given show that they terminated successfully in each case. Besides magnetic data, other information of a geographic nature was obtained. In the office at Washington, the reduction of the observations kept pace with the field-work. However, owing largely to the construction of the *Carnegie* and of her instrumental equipment, it was not possible to complete the report of the *Galilee* work in the Pacific Ocean (1905-08), but good progress was made, and the results will soon be ready for publication. The report gives a synopsis of the work done during the year.

PERSONAL

Sir Clements Markham has resigned the presidency of the Hakluyt Society. His services as Secretary and President have extended over 50 years. His successor as President is Mr. Alfred Gray, well known by his edition of Pyrard de Laval and Counsel to the Chairman of Committees of the House of Lords.

A geographical Society was organized in the German seaport of Rostock on Nov. 16, with a large membership. Dr. W. Ule, professor of geography at the University in that city, was elected President.

Mr. A. J. Herbertson, reader in geography at Oxford University, has been appointed to a professorship of geography.

Dr. Karl Uhlig, of Berlin, has been called to the chair of geography at Tübingen, to succeed Professor K. Sapper.

Dr. Alfred Grund, of the University of Berlin, has been made professor of geography in the German University of Prague.

The Royal Geographical Society has awarded a special gold medal to Commander Peary for his journey to the North Pole and for such scientific observations as his opportunities permitted; and a silver replica to Captain Bartlett for attaining 88° N. Lat.

Mr. Emmanuel de Margerie, the well-known French geographer and geologist, has been elected President of the Paris Geographical Society for 1910.

At the close of a lecture by Dr. Sven Hedin in Rome, on Jan. 30, the King of Italy gave to him the large gold medal that had been conferred upon him by the Italian Geographical Society.

Dr. R. DeC. Ward has been promoted to a chair of climatology at Harvard University.

Mr. Clarence C. Stewart, who had charge last year of the Carnegie Institution magnetic expedition to James Bay, has been assigned to magnetic work in South American countries, especially in Peru, Brazil and Bolivia.

Prof. R. E. Dodge has a valuable paper in the May number of the *Journal of Geography* on "Geography in the Rural Schools" from the forthcoming volume on "The Teaching of School Geography" of which Prof. Dodge and Miss Clara B. Kirchway are the authors.

Colgate University has conferred the degree of Doctor of Science upon Dr. J. M. Clarke, State Geologist and Director of the N. Y. State Museum.

The Italian Geographical Society has made Sir. Harry Johnston a Corresponding member and given its gold medal to the Prince of Monaco.

Dr. A. Stein, the Asian explorer, has been elected an honorary member of the Scottish Geographical Society.